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Some Camel-feeding Experiments

BY

H. E. CROSS, M.R.C.V.S., D.V.H., A. Sc.

Camel Specialist, Sohawa, Punjab.



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Some Camel-feeding Experiments.

[Received for publication on 11th May, 1917.]

OUR knowledge regarding the quantity of fodder that a camel requires is very limited, and no experiments have, so far as I am aware, been carried out to determine the quantity of fodder that a camel requires to keep him in condition. Requests having been frequently made by the military authorities for information regarding the quantity of fodder that should be given to camels, it was decided to carry out some feeding experiments on these animals.

The only camels available for the purpose were medium-sized camels suffering from surra (7-14 years old). It would have been much more satisfactory had it been possible to carry out the experiments with non-surra-infected camels, but this it was not possible to arrange.

The camel is an animal that can be trained to eat almost anything, and the fodder on which he feeds varies greatly in different parts of the world. The Punjabi camelmen prefer browsing to stall-feeding, and undoubtedly the camel thrives well if sufficient time is allowed for browsing, and the browsing is of good quality. When the browsing is poor or sufficient time is not available, fodder such as *missa bhusa* (pea straw), *moth bhusa* (*Phaseolus aconitifolius* straw), and *mung bhusa* (*Phaseolus mungo* straw), and, when in the season, green *tara-mira* (*Eruca sativa*), green *moth* (*Phaseolus aconitifolius*) and green gram are fed to the camels. As a rule the camelman does not feed gram to his camels, being unable to afford it. *Chitta bhusa* (wheat straw) and *phaliyat* (*Eruca sativa* stalks) are occasionally fed. Camelmen however do not like *chitta bhusa* (wheat straw) as a camel fodder and *phaliyat* (*Eruca sativa* stalks) has probably little nutritive value. Without doubt a camel thrives best on fodder and browsing that he has been accustomed to. A camel brought to a district, the browsing in which differs from that to which he has been accustomed or when stall-fed on fodder that he has not been used to, will fall off in condition; but if he is carefully looked after and only lightly loaded to start with, he quickly becomes accustomed to the change and will rapidly regain his condition.

Experiments regarding the quantity of fodder a camel will eat were carried out with the following :—

- (1) Gram and *missa bhusa*.
- (2) *Missa bhusa* without grain.
- (3) Gram and *moth bhusa*.
- (4) *Moth bhusa* without grain.
- (5) Barley, turnips and *moth bhusa*.
- (6) Gram and green *tara-mira*.
- (7) Green *sarson* (Indian colza).
- (8) Oat hay and ordinary hay.

The camels got poor browsing during the day : the fodder was given in the evening at about 5 P.M.

12 LB. OF GRAM AND MISSA BHUSA.

Amount (in lb.) eaten by each camel, G represents gram and B missa bhusa.

Day	CAMEL No. 1514		CAMEL No. 33		CAMEL No. 658		CAMEL No. 714		CAMEL No. 773		CAMEL No. 83		CAMEL No. 393		CAMEL No. 48	
	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B
1st	12	18	12	8	12	14	12	15	12	17	12	18	12	26	12	12
2nd	12	28	12	22	12	19	12	30	12	24	12	15	12	12	12	10
3rd	12	27	12	22	12	22	12	22	12	18	12	27	12	22	12	15
4th	12	28	12	22	12	20	12	17	12	26	12	12	12	18	12	16
5th	12	31	12	29	12	20	12	30	12	27	12	11	12	20	12	17
6th	12	31	12	30	12	25	12	35	12	31	12	11	12	17	12	8
AVERAGE . .	12	27.1	12	22.1	12	20.0	12	24.8	12	23.8	12	15.6	12	19.1	12	13.0

Average = 12 lb. gram and 20.6 lb. *missa bhusa*.

The gram was fed first and 40 lb. of *missa bhusa* was given to each camel ; the amount left over next morning was weighed.

SOME CAMEL-FEEDING EXPERIMENTS

3

6 LB. GRAM AND MISSA BHUSA.

Amount (in lb.) eaten by each camel, G represents gram and B missa bhusa.

Day	CAMEL No. 1987		CAMEL No. 2921		CAMEL No. 658		CAMEL No. 714		CAMEL No. 1959		CAMEL No. 1759		CAMEL No. 894		CAMEL No. 1314	
	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B
1st . . .	6	20	6	26	6	23	6	22	6	22	6	30	6	28	6	26
2nd . . .	6	12	6	23	6	20	6	22	6	20	6	27	6	27	6	25
3rd . . .	6	18	6	20	6	30	6	30	6	25	6	30	6	32	6	30
4th . . .	6	14	6	23	6	30	6	21	6	20	6	25	6	27	6	27
5th . . .	6	20	6	24	6	24	6	24	6	19	6	24	6	23	6	16
6th . . .	6	17	6	27	6	22	6	20	6	20	6	23	6	24	6	23
7th . . .	6	23	6	24	6	30	6	30	6	20	6	26	6	27	6	20
8th . . .	6	20	6	26	6	22	6	30	6	21	6	25	6	25	6	15
9th . . .	6	18	6	21	6	30	6	29	6	18	6	27	6	23	6	27
10th . . .	6	20	6	25	6	30	6	31	6	13	6	26	6	23	6	27
11th . . .	6	18	6	25	6	18	6	27	6	17	6	30	6	28	6	14
12th . . .	6	19	6	20	6	30	6	22	6	21	6	30	6	26	6	20
13th . . .	6	19	6	22	6	35	6	26	6	23	6	27	6	25	6	18
14th . . .	6	17	6	20	6	31	6	17	6	20	6	27	6	25	6	22
15th . . .	6	18	6	27	6	30	6	24	6	15	6	25	6	25	6	20
16th . . .	6	18	6	12	6	17	6	30	6	13	6	20	6	20	6	30
17th . . .	6	17	6	20	6	29	6	28	6	18	6	22	6	22	6	24
18th . . .	6	17	6	23	6	31	6	35	6	19	6	22	6	25	6	25
19th . . .	6	16	6	22	6	20	6	26	6	22	6	25	6	16	6	15
20th . . .	6	25	6	26	6	19	6	30	6	25	6	29	6	20	6	30
21st . . .	6	20	6	22	6	25	6	30	6	10	6	20	6	24	6	27
22nd . . .	6	16	6	18	6	19	6	26	6	21	6	20	6	19	6	34
23rd . . .	6	17	6	25	6	30	6	20	6	22	6	28	6	24	6	16
24th . . .	6	22	6	20	6	27	6	28	6	26	6	30	6	22	6	24
25th . . .	6	21	6	23	6	22	6	25	6	23	6	24	6	22	6	20
AVERAGE . . .	6	18.4	6	22.5	6	25.7	6	26.1	6	19.7	6	25.6	6	24.0	6	23

Average = 6 lb. gram, 23.1 lb. missa bhusa.

The gram was fed first and 40 lb. of missa bhusa was given to each camel; the amount left over next morning was weighed.

MISSA BHUSA.

Amount (in lb.) eaten by each camel.

Day	CAMEL No. 658	CAMEL No. 1987	CAMEL No. 1759	CAMEL No. 714	CAMEL No. 2921	CAMEL No. 894
1st . . .	27	26	33	30	23	35
2nd . . .	22	22	30	23	20	22
3rd . . .	30	24	26	26	20	23
4th . . .	26	20	25	21	22	20
5th . . .	28	26	23	16	25	22
6th . . .	26	18	32	18	27	23
7th . . .	22	22	23	16	23	24
8th . . .	22	22	15	22	20	25
9th . . .	30	32	32	20	32	39
10th . . .	31	24	28	23	23	24
AVERAGE .	26.4	23.6	27.2	22.5	23.5	26.7

Average = 24.9 lb. *missa bhusa*.

40 lb. of *missa bhusa* was given to each camel in the evening and the amount left over next morning was weighed.

4 LB. GRAM AND MISSA BHUSA, 2 YEAR OLD CAMELS.

Amount (in lb.) eaten by each camel, G represents gram and B missa bhusa.

Day	CAMEL No. 11 (MALE)		CAMEL No. 12 (MALE)		CAMEL No. 13 (FEMALE)	
	G	B	G	B	G	B
1st . . .	4	12	4	11	4	6
2nd . . .	4	12	4	14	4	12
3rd . . .	4	12	4	17	4	14
4th . . .	4	12	4	16	4	12
5th . . .	4	20	4	12	4	10
6th . . .	4	21	4	17	4	13
7th . . .	4	22	4	18	4	18
8th . . .	4	22	4	18	4	12
9th . . .	4	17	4	15	4	13
10th . . .	4	15	4	14	4	13
11th . . .	4	16	4	14	4	17
12th . . .	4	21	4	13	4	10
AVERAGE .	4	16.8	4	14.9	4	12.5

Average = 4 lb. gram and 14.7 lb. *missa bhusa*.

The gram was fed first and 30 lb. of *missa bhusa* was given to each camel ; the amount left over next morning was weighed.

SOME CAMEL-FEEDING EXPERIMENTS

5

6 LB. GRAM AND MOTH BHUSA.

Amount (in lb.) eaten by each camel, G represents gram and B moth bhusa.

Day	CAMEL No. 1		CAMEL No. 2		CAMEL No. 3		CAMEL No. 4		CAMEL No. 5		CAMEL No. 6	
	G	B	G	B	G	B	G	B	G	B	G	B
1st	6	20	6	28	6	19	6	20	6	18	6	22
2nd	6	19	6	30	6	20	6	20	6	24	6	30
3rd	6	20	6	28	6	20	6	30	6	30	6	40
4th	6	20	6	30	6	30	6	35	6	27	6	37
5th	6	21	6	34	6	27	6	37	6	30	6	10
6th	6	23	6	30	6	20	6	36	6	35	6	20
7th	6	23	6	30	6	23	6	36	6	33	6	20
8th	6	24	6	32	6	21	6	38	6	25	6	30
AVERAGE . . .	6	21.25	6	30.25	6	23.6	6	31.5	6	27.7	6	26.1

Average = 6 lb. gram and 26.7 lb. moth bhusa.

The gram was fed first and 50 lb. of moth bhusa was given to each camel; the amount left over next morning was weighed.

MOTH BHUSA.

Amount (in lb.) eaten by each camel.

Day	CAMEL No. 33	CAMEL No. 1052	CAMEL No. 773	CAMEL No. 1361	CAMEL No. 157	CAMEL No. 1624	CAMEL No. 383	CAMEL No. 620	CAMEL No. 273
1st	20	18	20	15	39	22	20	22	15
2nd	24	23	20	12	25	20	20	20	20
3rd	25	20	20	20	27	20	25	36	25
4th	28	25	30	29	34	33	25	30	32
5th	29	24	35	29	40	40	40	40	37
6th	29	25	40	22	38	36	30	37	32
7th	25	33	38	27	28	35	40	32	33
8th	30	28	44	22	35	35	40	34	40
9th	35	27	37	30	28	41	35	32	30
10th	32	27	25	25	41	39	38	38	39
11th	25	30	27	28	37	42	39	45	40
AVERAGE . . .	27.4	25.4	30.5	23.5	33.8	33.0	32.0	33.2	31.1

Average = 29.9 lb. moth bhusa.

50 lb. of moth bhusa was given to each camel and the amount left over next morning was weighed.

SOME CAMEL-FEEDING EXPERIMENTS

5 LB. BARLEY, TURNIPS AND MOTH BHUSA.

Amount (in lb.) eaten by each camel, B represents barley, T turnips and M. B. moth bhusa.

Day	CAMEL No. 1052			CAMEL No. 33			CAMEL No. 1314			CAMEL No. 1361			CAMEL No. 773		
	B	T	M. B	B	T	M. B	B	T	M. B	B	T	M. B	B	T	M. B
1st	5	20	25	5	20	30	5	20	30	5	20	25	5	20	30
2nd	5	20	20	5	20	21	5	20	21	5	20	30	5	20	30
3rd	5	30	30	5	30	30	5	30	30	5	30	21	5	30	30
4th	5	30	28	5	30	28	5	30	15	5	30	40	5	30	30
5th	5	30	22	5	30	34	5	30	30	5	30	27	5	30	22
6th	5	30	20	5	30	25	5	30	25	5	30	25	5	30	19
AVERAGE	5	26.6	24.1	5	26.6	28.0	5	26.6	25.1	5	26.6	28.0	5	26.6	26.8

Average = 5 lb. barley, 26.6 lb. turnips and 26.4 lb. moth bhusa.

The barley was given first, then the turnips and then the *bhusa*. The camels did not relish the barley; only 20 lb. of turnips were given to each camel the first two days. 50 lb. of *moth bhusa* was given to each camel and the amount left over next morning was weighed.

6 LB. GRAM AND GREEN TARA-MIRA.

Amount (in lb.) eaten by each camel, G represents gram and G T green tara-mira.

Day	CAMEL No. 714		CAMEL No. 1759		CAMEL No. 658		CAMEL No. 617		CAMEL No. 1653		CAMEL No. 606		CAMEL No. 894	
	G	G T	G	G T	G	G T	G	G T	G	G T	G	G T	G	G T
1st	6	50	6	44	6	64	6	59	6	72	6	65	6	71
2nd	6	59	6	64	6	59	6	55	6	75	6	70	6	76
3rd	6	49	6	60	6	50	6	62	6	64	6	74	6	58
4th	6	74	6	58	6	74	6	48	6	68	6	62	6	70
5th	6	80	6	82	6	70	6	82	6	78	6	82	6	70
6th	6	46	6	82	6	61	6	79	6	69	6	74	6	72
7th	6	65	6	62	6	78	6	78	6	67	6	78	6	64
8th	6	74	6	65	6	73	6	73	6	75	6	74	6	74
9th	6	52	6	58	6	74	6	76	6	69	6	73	6	77
10th	6	59	6	60	6	68	6	60	6	72	6	72	6	72
11th	6	60	6	61	6	68	6	60	6	68	6	77	6	75
12th	6	59	6	62	6	51	6	79	6	69	6	80	6	86
13th	6	39	6	44	6	42	6	61	6	51	6	62	6	68
14th	6	60	6	53	6	35	6	68	6	57	6	69	6	73
15th	6	61	6	58	6	56	6	73	6	62	6	78	6	68
16th	6	45	6	50	6	63	6	69	6	71	6	70	6	59
17th	6	52	6	59	6	52	6	77	6	62	6	60	6	62
18th	6	52	6	62	6	71	6	69	6	68	6	72	6	64
19th	6	70	6	56	6	69	6	75	6	72	6	72	6	69
20th	6	68	6	54	6	62	6	77	6	72	6	65	6	78
21st	6	78	6	77	6	58	6	78	6	79	6	78	6	58
22nd	6	68	6	62	6	48	6	67	6	75	6	64	6	71
23rd	6	72	6	66	6	67	6	78	6	77	6	72	6	68
24th	6	72	6	66	6	67	6	78	6	77	6	72	6	76
AVERAGE	6	60.1	6	60.8	6	61.7	6	70.0	6	69.0	6	71.3	6	69.9

Average = 6 lb. gram and 66.1 lb. green tara-mira.

The gram was fed first and 100 lb. of green *tara-mira* was then given to each camel and the amount left over next morning weighed.

SOME CAMEL-FEEDING EXPERIMENTS

7

GREEN SARSON.

Day	AMOUNT EATEN BY EACH CAMEL IN LB.					Amount given to each camel in lb.
	No. 773	No. 1314	No. 1361	No. 1052	No. 33	
1st . . .	82	82	82	82	82	82
2nd . . .	100	100	100	100	100	100
3rd . . .	140	145	150	140	150	150
4th . . .	186	170	192	152	175	200
5th . . .	143	130	183	160	175	200
6th . . .	120	140	130	179	160	200
7th . . .	115	145	168	135	140	200
AVERAGE .	126.5	130.2	143.5	136.7	140.2	..

Average = 135.4 lb. green sarson.

On the 5th day the fæces became soft, like cow dung.

OAT HAY AND HAY.

Oat hay. Several camels were fed on oat hay. The oat hay was at first mixed with an equal quantity of *missa bhusa*, the quantity of the latter being daily reduced till finally only oat hay was given. The camels did not relish it, and the largest quantity eaten was 17 lb. The oat hay however was of poor quality.

Hay. Six camels were starved for one day and then fed on 6 lb. of gram and hay. The amount eaten is given in the following table. For the first three days they were given no grazing, for the remaining three days they were allowed to browse during the day.

4 LB. GRAM AND HAY.

G represents gram and *H* hay.

Day		AMOUNT EATEN IN LB.																	
		AMOUNT GIVEN in lb.		CAMEL No. 658		CAMEL No. 1653		CAMEL No. 714		CAMEL No. 292		CAMEL No. 157		CAMEL No. 303					
		G	H	G	H	G	H	G	H	G	H	G	H	G	H				
1st	.	.	.	.	.	6	20	6	15	6	16	6	20	6	0	6	20	6	20
2nd	.	.	.	.	.	6	35	6	20	6	18	6	31	6	10	6	24	6	15
3rd	.	.	.	.	.	6	35	6	20	6	23	6	16	6	25	6	15	6	10
4th	.	.	.	.	.	6	35	6	8	6	14	6	22	6	13	6	12	6	1
5th	.	.	.	.	.	6	35	6	15	6	10	6	8	6	20	6	20	6	13
6th	.	.	.	.	.	6	35	6	14	6	15	6	17	6	19	6	22	6	15
AVERAGE . . .		..	..	6	15.3	6	16.0	6	16.0	6	19.0	6	19.0	6	18.8	6	12.3		

Average = 6 lb. gram and 16.2 lb. hay.

MAXIMUM QUANTITY OF FODDER EATEN, IN ADDITION TO POOR BROWSING.

- (1) 12 lb. gram and 35 lb. *missa bhusa*.
- (2) 6 lb. gram and 35 lb. *missa bhusa*.
- (3) 39 lb. *missa bhusa*.
- (4) 2 lb. gram and 22 lb. *missa bhusa* (2 year old camels).
- (5) 6 lb. gram and 40 lb. *moth bhusa*.
- (6) 45 lb. *moth bhusa*.
- (7) 5 lb. barley, 30 lb. turnips, and 40 lb. *moth bhusa*.
- (8) 6 lb. gram and 86 lb. green *tara-mira*.
- (9) 192 lb. green *sarson*.
- (10) 6 lb. gram and 31 lb. hay.
- (11) 17 lb. oat hay.

SUMMARY.

The average quantity of fodder eaten, in addition to poor browsing, was as follows :—

- (1) 12 lb. gram + 20·6 lb. *missa bhusa*.
- (2) 6 lb. gram + 23·1 lb. *missa bhusa*.
- (3) 24·9 lb. *missa bhusa*.
- (4) 4 lb. gram + 14·7 lb. *missa bhusa* (2 year old camels).
- (5) 6 lb. gram + 26·7 lb. *moth bhusa*.
- (6) 29·9 lb. *moth bhusa*.
- (7) 5 lb. barley + 26·6 lb. turnips + 26·4 lb. *moth bhusa*.
- (8) 6 lb. gram + 66·1 lb. green *tara-mira*.
- (9) 135·4 lb. green *sarson*.
- (10) 6 lb. gram + 16·2 lb. hay.

CONCLUSIONS.

Taking into consideration the fact that these experiments were carried out on camels suffering from surra and doing no work, it is probable that healthy camels on hard work would eat very much more. The experiments however show that the present government ration of 16 lb. of a mixture of wheat and *missa bhusa* per camel is insufficient.

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